No. 200000014

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Research Seeds, Inc.

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSE, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

ALFALFA

'WL 442'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this eighth day of May, in the year of our Lord two thousand one.

Attest:

Alan R. Post

Acting Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Secretary of Agriculture

REPRODUCE LOCALLY. *Include form number and date on all reproductions.* FORM APPROVED - OMB NO. 0581-0055

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY DIVISION - PLANT VARIETY PROTECTION OFFICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions and information collection burden statement on reverse)

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

per fax of 1-19-01 mkf 1-19-01

1. NAME OF APPLICANT(S) *(as it is to appear on the Certificate)*
~~AgriBioTech, Inc.~~
Research Seeds, Inc.

2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER
W138

3. VARIETY NAME
WL 442

4. ADDRESS *(Street and No., or R.F.D. No., City, State, and ZIP Code, and Country)*
~~120 Corporate Park Drive~~
~~Henderson, NV 89014~~
~~USA~~
225 Florence Road
St. Joseph MO 64504

5. TELEPHONE *(include area code)*
~~(702) 566-2440~~
816-238-7333

6. FAX *(include area code)*
~~(702) 566-2450~~
816-238-7849

FOR OFFICIAL USE ONLY
PVPO NUMBER: 200000014

FILING DATE: 10/20/99

7. GENUS AND SPECIES NAME
Medicago sativa L.

8. FAMILY NAME *(Botanical)*
Leguminosae

9. CROP KIND NAME *(Common name)*
Alfalfa

FEES RECEIVED
FILING AND EXAMINATION FEE: $2450 DATE 10/20/99
CERTIFICATION FEE: $320.00 DATE 2-23-01

10. IF THE APPLICANT NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION *(corporation, partnership, association, etc.) (Common name)*
Corporation

11. IF INCORPORATED, GIVE STATE OF INCORPORATION
Nevada

12. DATE OF INCORPORATION
9/12/89

13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS
Michael Peterson
W-L Research Inc.
8701 W. U.S. Highway 14
Evansville, WI 53536 USA

14. TELEPHONE *(include area code)*
(608) ~~882-4100~~ 240-0636
per phone conf mkf 1-19-01

15. FAX *(include area code)*
(608) 882-5800

16. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED *(Follow instructions on reverse)*

a. [X] Exhibit A. Origin and Breeding History of the Variety
b. [X] Exhibit B. Statement of Distinctness
c. [X] Exhibit C. Objective Description of the Variety
d. [X] Exhibit D. Additional Description of the Variety *(Optional)*
e. [X] Exhibit E. Statement of the Basis of the Applicant's Ownership
f. [X] Voucher Sample *(2,500 viable untreated seeds or, for tuber propagated varieties verification that tissue culture will be deposited and maintained in an approved public repository)*
g. [X] Filing and Examination Fee ($2,460), made payable to "Treasurer of the United States" *(Mail to PVPO)*

17. DOES THE APPLICANT SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY, AS A CLASS OF CERTIFIED SEED? *(See Section 83(a) of the Plant Variety Protection Act)*
[ ] YES *(If "yes," answer items 18 and 19 below)* [X] NO *(If "no," go to item 20)*

18. DOES THE APPLICANT SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?
[ ] YES [ ] NO

19. IF "YES" TO ITEM 18, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?
[ ] FOUNDATION [ ] REGISTERED [ ] CERTIFIED

20. HAS THE VARIETY OR A HYBRID PRODUCED FROM THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES?
[X] YES *(If "yes," give names of countries and dates)* [ ] NO
United States, December 1998

21. The applicant(s) declare that a viable sample of basic seed of the variety will be furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate.

The undersigned applicant(s) is(are) the owner(s) of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 42, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act.

Applicant(s) is(are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF APPLICANT *(Owner(s))*		SIGNATURE OF APPLICANT *(Owner(s))*	
NAME *(Please print or type)* Michael A. Peterson		NAME *(Please print or type)*	
CAPACITY OR TITLE Research Director	DATE 10/18/99	CAPACITY OR TITLE	DATE

Exhibit A

Origin and Breeding History of WL 442

WL 442 is a 167-plant synthetic variety resulting from phenotypic recurrent selection for resistance to Verticillium wilt. Source material traces to two elite experimental lines selected for resistance to Phytophthora root rot. Parental germplasm traces to WL 457 (50%), WL 512 (30%), WL 450 (10%), and WL 504 (10%). The 167 parental selections were grown in an isolation cage at Warden, Washington. Breeder (Syn 1) seed was bulked (all seed from all plants) following harvest in 1997.

Type and Frequency of Variants

No variants are recognized in WL 442 beyond the limits given in Exhibit C.

Evidence of Uniformity and Stabilty

We have observed stability and uniformity in essential and distinguishing characteristics (e.g. disease resistance, fall dormancy, flower color) between the Syn 1 and Syn 2 generations of seed increase. WL 442 is as uniform as other alfalfa varieties previously accepted by State seed certification programs.

Exhibit B

Statement of Distinctness for WL 442

WL 442 is an intermediate dormancy (Group 7) variety that possesses superior pest (disease, insect, nematode) resistance, higher hay yield potential and greater persistence when compared to other alfalfa varieites with similar adaptation.

WL 442 is most similar to WL 457, without qualification. Looking at overall plant color, regrowth after cutting, fall dormancy and insect and nematode resistance suggests that WL 442 and WL 457 are very similar. However, there are signficant differences in disease resistance between these two varieties that indicate that WL 442 and WL 457 are different. WL 442 is resistant to bacterial wilt (Table 2); WL 457 is moderately resistant to this disease. WL 442 is highly resistant to Verticillium wilt (Table 3); WL 457 displays low resistance to this disease. Finally, WL 442 is highly resistant to anthracnose (Race 1) (Table 4); WL 457 displays low resistance to this disease.

There are three additional alfalfa varieties which are similar to WL 442: WL 414, Parade and Sutter. However, distinct and significant differences exist between WL 442 and each of these three varieties.

WL 442 is similar to WL 414. However, WL 442 is a Group 7 dormancy variety (Table 1); WL 414 is a Group 6 dormancy variety. In addition, WL 442 displays high resistance to Verticillium wilt (Table 3); WL 414 is resistant to this disease.

WL 442 is also similar to Parade. However, WL 442 is resistant to bacterial wilt (Table 2); Parade is moderately resistant to this disease. In addition, WL 442 is highly resistant to the blue alfalfa aphid (Table 5); Parade is resistant to this insect pest.

WL 442 is also similar to Sutter. However, WL 442 is highly resistant to Verticillium wilt (Table 3); Sutter displays low resistance to this disease. Finally, WL 442 is highly resistant to the blue alfalfa aphid (Table 5); Sutter is moderately resistant to this insect pest.

WL 442
Exhibit B

Table 1 > Fall Dormancy Reaction* - Bakersfield, CA (1998)

Date Last Cut 9/26/98 Date Regrowth Scored 10/29/98

Entry (Dormancy Group)	Fall Height (Inches)
Archer (5)	14.0
WL 414	**16.5**
ABI 700 (6)	17.1
Dona Ana (7)	19.4
WL 442	**20.3**
Pierce (8)	22.5
Mean (all entries)	19.3
LSD (.05)	1.94
CV (%)	6.76

*Fall dormancy was measured as natural plant height in a space-planted, four-replicate trial with approximately 45 plants/entry/replicate.

WL 442
Exhibit B

Table 2 > Bacterial Wilt Resistance* - Evansville, WI (1998)

Entry	Unadjusted % Resistance	Adjusted % Resistance	A.S.I.
WL 442	**46**	**44**	**2.2**
Vernal (R)	44	42	2.3
WL 457	**25**	**24**	**3.1**
Parade	**24**	**23**	**3.1**
Sonora (S)	1	1	4.3
Mean (all entries)	32		2.6
LSD (.05)	10		0.3
CV (%)	12		8.9

*Data obtained from a 3-replicate space-plant field nursery with approximately 75 plants/entry/replicate. Plants were scored on a 0-5 scale where 0 and 1 are resistant and 5 is dead.

WL 442
Exhibit B

Table 3 > Verticillium Wilt Resistance* - Evansville, WI (1998)

Entry	Unadjusted % Resistance	Adjusted % Resistance	A.S.I.
Oneida VR (HR)	57	60	2.3
WL 442	**55**	**58**	**2.3**
WL 414	**34**	**36**	**3.0**
WL 457	**13**	**14**	**3.7**
Sutter	**10**	**10**	**3.9**
Saranac (S)	5	5	4.3
Mean (all entries)	31		3.3
LSD (.05)	9		0.2
CV (%)	24		6.1

*Data obtained from a 4-replicate growth room cone test with approximately 75 plants/entry/replicate. Plants were scored on 1-5 scale; 1 and 2 are resistant and 5 is a dead plant.

WL 442
Exhibit B

Table 4 > Anthracnose (Race 1) Resistance* - Evansville, WI (1998)

Entry	Unadjusted % Resistance	Adjusted % Resistance
Arc (HR)	60	65
WL 442	**54**	**59**
WL 457	**10**	**11**
Saranac (S)	1	1
Mean (all entries)	25	
LSD (.05)	8	
CV (%)	23	

*Data was obtained from a 4-replicate greenhouse flat test with approximately 50 seedlings/entry/replicate. Percent resistance was based on % seedling survival.

WL 442
Exhibit B

Table 5 > Blue Alfalfa Aphid Resistance* - Bakersfield, CA (1998)

Entry	Unadjusted % Resistance	Adjusted % Resistance	A.S.I.
WL 442	**56**	**64**	**2.3**
Cuf 101 (R)	48	55	2.6
Parade	**41**	**47**	**3.0**
Sutter	**25**	**29**	**3.5**
Caliverde (S)	1	1	4.9
Mean (all entries)	46		2.8
LSD (.05)	4		0.3
CV (%)	5		9.1

*Data obtained from a 4-replicate greenhouse flat test with approximately 45 seedlings/entry/replicate. Plants were scored on a 1-5 scale with 1-3 resistant and 4-5 susceptible.

U.S. DEPARTMENT OF AGRICULTURE
EXHIBIT C
AGRICULTURAL MARKETING SERVICE
SCIENCE & TECHNOLOGY DIVISION
PLANT VARIETY PROTECTION OFFICE
BELTSVILLE, MARYLAND 20705

(Alfalfa)

OBJECTIVE DESCRIPTION OF VARIETY

ALFALFA *(Medicago sativa, sensu* Gunn *et al.)*

NAME OF APPLICANT(S)
AgriBioTech, Inc.

ADDRESS *(Street and No. or R.F.D. No., City, State, and Zip Code)*
120 Corporate Park Drive
Henderson, NV 89014

2 FOR OFFICIAL USE ONLY

PVPO NUMBER

VARIETY NAME
WL 442

TEMPORARY OR EXPERIMENTAL DESIGNATION
W138

PLEASE READ ALL INSTRUCTIONS CAREFULLY: Place the appropriate number that describes the varietal character of this variety in the boxes below. Place a zero in the first box (e.g. [ ][ ][ ] or [ ][ ]) when number is either 99 or less or 9 or less respectively. Data for quantitative plant characters should be base on a minimum of 100 plants. Comparative data should be determined from varieties entered in the same trial. Royal Horticultural Society or any recognized color standard may be used to determine plant colors; designate system used: Munsell color charts, 1st edition. 1952.

Please answer all questions for your variety; lack of response may delay progress of your application.

1. FALL DORMANCY: (DETERMINED FROM SPACED PLANTINGS)

TESTING INSTITUTION AND LOCATION	DATE OF LAST CUT	DATE REGROWTH SCORED	REGROWTH SCORE OR AVERAGE HEIGHT						
			APPLICATION VARIETY	CHECK VARIETIES*					
				ABI 700	Sutter	Pio 5715	LSD .05	CV	$\bar{x}$
W-L Research Evansville, WI	9/10/96	10/12/96	7.8"	7.0"	7.8"	8.5"	0.5	8.5	7.2

(* The varieties in parentheses are acceptable check varieties; application varieties must be bracketed by check varieties)

[3] CLASS

1 = Very Non-Dormant ('CUF 101', 'Mecca', '5929')
2 = Non-Dormant ('Moapa 69', '5715', 'Pierce')
3 = Non-Dormant ('Mesilla', 'Sutter', 'Malone')
4 = Moderately Dormant ('Lahontan', '581', 'Express')
5 = Moderately Dormant ('Excalibur', 'Du Puits', '555')
6 = Moderately Dormant ('Saranac', 'WL 316', 'Legend')
7 = Dormant ('Ranger', 'Arrow', 'WL 317')
8 = Dormant ('Vernal', '526', 'Wrangler')
9 = Very Dormant ('Norseman', '5151', 'Spredor 2')

Specify scoring system used: Height in inches from a replicated space-plant nursery
4 replicates, 40 plants/replicate

[3] FALL GROWTH HABIT (Determined from Fall Dormancy Trials)

1 = Erect ('CUF 101')
3 = Semi-Erect ('Mesilla')
5 = Intermediate ('Saranac AR')
7 = Semi-Decumbent ('Vernal')
9 = Decumbent ('Norseman')

2. RECOVERY AFTER FIRST SPRING CUT (In Southwest, first cut after March 21):

[3]

1=Very fast ('CUF 101') 3= Fast ('Mesilla') 5=Intermediate ('Ranger') 7=Slow ('Vernal')
9=Very slow ('Norseman')

TEST LOCATION: Lodi, California

3. AREAS OF ADAPTATION IN U.S. :

Describe the area for which this variety is adapted; that is, define geographically, or in terms of climate and soils, the region(s) in which it may reasonably be expected to perform well.
THIS CHARACTERIZATION MUST BE SUPPORTED BY TEST LOCATIONS AND DATA ON PERSISTENCE.

WL 442 is well-adapted to the Southwestern United States, including the central valley of California, the northern half of Arizona and New Mexico, and Southwestern Nevada. Please see yield and persistence data supporting this adaptation claim in attachment C-1.

4. FLOWERING DATE (When 10% of plants possesses open flowers at time of first spring cut):

[03]	Days earlier than	[3]
[0]	..... Same as	[2]
[04]	Days later than	[1]

Please make all 3 comparisons if possible.

1='CUF 101' 2='Mesilla' 3='Saranac'
4='Vernal' 5='Norseman'

Test location Bakersfield, California

5. PLANT COLOR (Determined from healthy regrowth 3 weeks after first spring cut, controlling leafhoppers if necessary):

[3]

1= Very Dark Green ('524') 2=Dark Green ('Vernal') 3=Light Green ('Ranger')

Color Chart Value (Specify chart used) Munsell Color Co. 1977 (Tissue color charts)

Application Variety 6/6

Vernal 4/6

Test Location Bakersfield, California

6. CROWN TYPE (Determined from spaced plants):

[3] Non-creeping types 1=Broad ('Vernal') 2=Intermediate ('Saranac AR') 3=Narrow ('CUF 101')

Creeping types 4=Creeping rooted ('Rangelander') 5=Rhizomatous ('Rhizoma')

7. FLOWER COLOR (Determine frequency of plants for each color class as defined by USDA Agricultural Handbook No. 424 (Barnes 1972), allowing all plants in plot to flower):

[100]	% Purple and Violet (Subclasses 1.1 to 1.4)	[0]	% Yellow (Subclasses 4.1 to 4.4)
[000]	% Variegated (Subclasses 2.1 to 2.9)	[0]	% White (Class 5)
[000]	% Cream (Class 3)		

Test Location Yuma, Arizona

8. **POD SHAPE** (Determine frequency of plants with the following pod shapes produced on well cross-pollinated racemes):

100	% Tightly coiled (one or more coils, center more or less closed).
0	% Loosely coiled (one or more coils, center conspicuously open).
0	% Sickle (less than one coil).

Test location Bakersfield, California

9. **PEST AND DISEASE RESISTANCE:** Provide in the appropriate space, trial data for application variety and appropriate resistant (R) and susceptible (check varieties, resistance class, year tested, synthetic generation tested, number of plants tested, least significant difference statistics (LSD .05), coefficient of variance (CV), experimental mean ($\bar{x}$), the institution in charge of test, and location of test, and whether test is a field or laboratory evaluation. Data must be from tests conduct by private firms, agricultural experiment stations or USDA. Describe scoring system and any test procedure which differs from those approved by the NAAIC. Resistance levels should be characterized using % resistant plants as follows: S=<6%, LR=6-14%, MR=15-30%, R=31-50%, HR=>50%. Checks should be based on long term resistance averages as approved by the NAAIC. Data must be adjusted to the long term mean of the resistant check variety. Supply both adjusted and unadjusted values. Trial data from other test years or locations should be presented whenever available on a separate document as Exhibit D. Seeds of the check varieties and germplasm lines below can be obtained from the USDA Soybean & Alfalfa Research Laboratory, Bldg.. 002, Rm. 10, BARC-West, Beltsville, MD, 20705. Comparison is required with check varieties listed below; data must be adjusted according to the expected value of the resistant check. State who made the adjustment

A. **DISEASE RESISTANCE:**

ANTHRACNOSE (RACE 1) *(Colletotrichum trifolii)*

Test conducted by W-L Research at Evansville, Wisconsin

Variety	Resistance Class/ Expected Value	Syn. Gen. Tested	Unadjusted % Resistance	Adjusted % Resistance	Number of Plants Tested
This Variety	HR	Syn 1	65	73	210
1. 'Arc' or	HR 65%		--	--	--
2. 'Saranac AR'	R 45%		40	45	205
3. 'Saranac'	S		0	0	196
L.S.D. (.05)			11		
C.V. (%)			23		
$\bar{x}$			35		

Field or Laboratory/ Year Tested Laboratory/1995

Scoring system used Percent resistance based on seedling survival

ANTHRACNOSE (RACE 2) *(Colletotrichum trifolii)*

Test conducted by not tested at

Variety	Resistance Class	Synthetic Generation Tested	Unadjusted % Resistance	Adjusted % Resistance	Number of Plants Tested
This Variety					
1. 'Saranac AR'	R 45%				
2. 'Arc' or	S				
3. 'Saranac'	S				
L.S.D. (.05)					
C.V. (%)					
$\bar{x}$					

Field or Laboratory/ Year Tested

Scoring system used

A. DISEASE RESISTANCE: (continued)

APHANOMYCES ROOT ROT (Race 1) *(Aphanomyces euteiches)*

Test conducted by Not tested at _____

Variety	Resistance Class	Synthetic Generation Tested	Unadjusted % Resistance	Adjusted % Resistance	Number of Plants Tested
This Variety 1. 'WAPH-1' 2. 'Agate'	R 50% S 1%				
L.S.D. (.05) C.V. (%) $\bar{x}$					

Field or Laboratory/ Year Tested _____

Scoring system used _____

APHANOMYCES ROOT ROT (Race 2) *(Aphanomyces euteiches)*

Test conducted by Not tested at _____

Variety	Resistance Class	Synthetic Generation Tested	Unadjusted % Resistance	Adjusted % Resistance	Number of Plants Tested
This Variety 1. 'WAPH-1' 2. 'Agate'	R 50% S 1%				
L.S.D. (.05) C.V. (%) $\bar{x}$					

Field or Laboratory/ Year Tested _____

Scoring system used _____

BACTERIAL WILT *(Clavibacter michiganense)*

Test conducted by W-L Research at Evansville, Wisconsin

Variety	Resistance Class	Synthetic Generation Tested	Unadjusted % Resistance	Adjusted % Resistance	Number of Plants Tested
This Variety 1. 'Vernal' 2. 'Narragansett' 3. or 'Sonora'	R R 42% S 1% S 1%	Syn 1	31 32 -- 4	41 42 -- 5	192 235 -- 238
L.S.D. (.05) C.V. (%) $\bar{x}$			11 15 33		

Field or Laboratory/ Year Tested Field/1997

Scoring system used Plants scored on 0-5 scale where 0 and 1 are resistant and 5 is dead.

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A. DISEASE RESISTANCE: (continued)

COMMON LEAFSPOT ***(Pseudopeziza medicaginis)***

Test conducted by Not tested at _____

Variety	Resistance Class	Synthetic Generation Tested	Unadjusted % Resistance	Adjusted % Resistance	Number of Plants Tested
This Variety 1. 'MSA-CW3ANS3' 2. or 'Ramsey' 3. 'Ranger' 4. 'Moapa 69'	 HR 60% HR 60% MR 30% S 0-10%				
L.S.D. (.05) C.V. (%) $\bar{x}$					

Field or Laboratory/ Year Tested _____

Scoring system used _____

DOWNY MILDEW ***(Peronospora trifoliorum)***

Isolate , if known _____

Test conducted by Not Tested at _____

Variety	Resistance Class	Synthetic Generation Tested	Unadjusted % Resistance	Adjusted % Resistance	Number of Plants Tested
This Variety 1. 'KS208' 2. 'Saranac' isolates 15 & 17 isolate 18 3. 'Kanza'	 HR 80% MR 15-20% R 50-60% S 0-5%				
L.S.D. (.05) C.V. (%) $\bar{x}$					

Field or Laboratory/ Year Tested _____

Scoring system used _____

FUSARIUM WILT ***(Fusarium oxysporum f. medicaginis)***

Test conducted by W-L Research at Evansville, Wisconsin

Variety	Resistance Class	Synthetic Generation Tested	Unadjusted % Resistance	Adjusted % Resistance	Number of Plants Tested
This Variety 1. 'Agate' 2. 'MNGN-1'	HR HR 54% S 4%	Syn 1	57 45 6	68 54 7	175 235 198
L.S.D. (.05) C.V. (%) $\bar{x}$			20 23 36		

Field or Laboratory/ Year Tested Field/1997

Scoring system used 0-5 scale where 0 and 1 are resistant and 5 is dead

20000014

A. DISEASE RESISTANCE: (continued)

PHYTOPHTHORA ROOT ROT ***(Phytophthora megasperma* f. *medicaginis)***

Test conducted by W-L Research at Evansville, Wisconsin

Variety	Resistance Class	Synthetic Generation Tested	Unadjusted % Resistance	Adjusted % Resistance	Number of Plants Tested
This Variety	HR	Syn 1	66	60	215
1. 'Agate' MnPD-1	R 43%		51	46	230
2. 'Saranac'	S 3%		3	3	244
L.S.D. (.05)			14		
C.V. (%)			15		
$\bar{x}$			40		

Field or Laboratory/ Year Tested Greenhouse/1996

Scoring system used Percent resistance based on seedling survival.

VERTICILLIUM WILT ***(Verticillium albo-atrum)***

Test conducted by W-L Research at Evansville, Wisconsin

Variety	Resistance Class	Synthetic Generation Tested	Unadjusted % Resistance	Adjusted % Resistance	Number of Plants Tested
This Variety	HR	Syn 1	55	56	205
1. 'Vertus' or	R 40%		--	--	--
2. 'Oneida VR'	HR 60%		59	60	194
3. 'Saranac'	S 2%		4	4	187
L.S.D. (.05)			10		
C.V. (%)			25		
$\bar{x}$			39		

Field or Laboratory/ Year Tested Greenhouse/1995

Scoring system used Plants scored 1-5; 1 and 2 are resistant and 5 is a dead plant.

OTHER (SPECIFY) _____

Test conducted by _____ at _____

Variety	Resistance Class	Synthetic Generation Tested	Unadjusted % Resistance	Adjusted % Resistance	Number of Plants Tested
This Variety					
1.					
2.					
3.	S				
L.S.D. (.05)					
C.V. (%)					
$\bar{x}$					

Field or Laboratory/ Year Tested _____

Scoring system used _____

2000001 4

B. INSECT RESISTANCE:

BLUE ALFALFA APHID *(Acyrthosiphon kondoi)*

Test conducted by W-L Research at Bakersfield, California

Variety	Resistance Class	Synthetic Generation Tested	Unadjusted % Resistance	Adjusted % Resistance	Number of Plants Tested
This Variety	HR	Syn 1	62	57	172
1. 'CUF 101'	HR 55%		60	55	181
2. 'PA-1' or	S 10%		--	--	--
3. 'Caliverde'	S 3%		4	4	167
L.S.D. (.05)			7		
C.V. (%)			11		
$\bar{x}$			42		

Field or Laboratory/ Year Tested Greenhouse/1995

Scoring system used Plants scored on 1-5 scale with 1-3 resistant and 4-5 susceptible.

PEA APHID *(Acyrthosiphon pisum)*

Test conducted by W-L Research at Bakersfield, California

Variety	Resistance Class	Synthetic Generation Tested	Unadjusted % Resistance	Adjusted % Resistance	Number of Plants Tested
This Variety	HR	Syn 1	67	85	185
1. 'CUF 101' or	HR 55%		--	--	--
2. 'PA-1' or	HR 55%		43	55	197
3. 'Baker'	R 45%		--	--	--
4. 'Vernal' or	S 5%		--	--	--
5. 'Moapa 69'	S 5%		6	8	182
L.S.D. (.05)			14		
C.V. (%)			17		
$\bar{x}$			39		

Field or Laboratory/ Year Tested Greenhouse/1995

Scoring system used Plants scored on 1-5 scale where 1-3 is resistant and 4-5 is susceptible.

SPOTTED ALFALFA APHID *(Therioaphis maculata)*

Test conducted by W-L Research at Bakersfield, California

Variety	Resistance Class	Synthetic Generation Tested	Unadjusted % Resistance	Adjusted % Resistance	Number of Plants Tested
This Variety	HR	Syn 1	80	68	165
1. 'CUF 101' or	HR 60%		71	60	159
2. 'Baker'	R 50%		--	--	--
3. 'Arc' or	S 3%		--	--	--
4. 'Caliverde'	S 3%		2	2	187
L.S.D. (.05)			9		
C.V. (%)			9		
$\bar{x}$			51		

Field or Laboratory/ Year Tested Greenhouse/1995

Scoring system used Plants scored on 1-5 scale where 1-2 are resistant and 3-5 are susceptible.

20000014

B. INSECT RESISTANCE: (continued)

POTATO LEAFHOPPER YELLOWING *(Empoasca fabae)*

Test conducted by Not tested at

Variety	Resistance Class	Synthetic Generation Tested	Unadjusted % Resistance	Adjusted % Resistance	Number of Plants Tested
This Variety 1. 'MSA-CW3AN3' 2. 'Ranger'	R 70% S 5%				
L.S.D. (.05) C.V. (%) $\bar{x}$					

Field or Laboratory/ Year Tested

Scoring system used

OTHER (SPECIFY)

Test conducted by at

Variety	Resistance Class	Synthetic Generation Tested	Unadjusted % Resistance	Adjusted % Resistance	Number of Plants Tested
This Variety 1. 2. 3.	S				
L.S.D. (.05) C.V. (%) $\bar{x}$					

Field or Laboratory/ Year Tested

Scoring system used

C. NEMATODE RESISTANCE:

NORTHERN ROOT KNOT NEMATODE *(Meloidogyne hapla)*

Test conducted by W-L Research at Warden, Washington

Variety	Resistance Class	Synthetic Generation Tested	Unadjusted % Resistance	Adjusted % Resistance	Number of Plants Tested
This Variety 1. 'Nevada Syn XX' 2. 'Lahontan'	MR HR 90% S 3%	Syn 1	21 75 1	25 90 11	290 296 273
L.S.D. (.05) C.V. (%) $\bar{x}$			16 17 22		

Field or Laboratory/ Year Tested Greenhouse/1998

Scoring system used Based on root gall score of 1-4; 1=resistant and 2-4=susceptible

C. NEMATODE RESISTANCE: (continued)

20000014

SOUTHERN ROOT KNOT NEMATODE *(Meloidogyne incognita)*

Test conducted by Crop Characteristics at Farmington, Minnesota

Variety	Resistance Class	Synthetic Generation Tested	Unadjusted % Resistance	Adjusted % Resistance	Number of Plants Tested
This Variety 1. 'Moapa 69' 2. 'Lahontan'	R R 50% S 3%	Syn 1	37 49 1	38 50 1	350 330 345
L.S.D. (.05) C.V. (%) $\bar{x}$			7 14 29		

Field or Laboratory/ Year Tested Greenhouse/1997

Scoring system used Based on root gall scale of 1-4; 1 is resistant, 2-4 are susceptible

STEM NEMATODE *(Ditylenchus dipsaci)*

Test conducted by W-L Research at Warden, Washington

Variety	Resistance Class	Synthetic Generation Tested	Unadjusted % Resistance	Adjusted % Resistance	Number of Plants Tested
This Variety 1. 'Vernema' or 2. 'Lahontan' 3. 'Ranger' or 4. 'Moapa 69'	HR R 60% R 40% S 5% S 1%	Syn 1	47 50 -- 6 --	56 60 -- 7 --	310 294 -- 305 --
L.S.D. (.05) C.V. (%) $\bar{x}$			3 5 34		

Field or Laboratory/ Year Tested Greenhouse/1995

Scoring system used Plants scored 1-5; 1 and 2 are resistant and 5 is a dead plant.

OTHER (SPECIFY)

Test conducted by at

Variety	Resistance Class	Synthetic Generation Tested	Unadjusted % Resistance	Adjusted % Resistance	Number of Plants Tested
This Variety 1. 2. 3.					
L.S.D. (.05) C.V. (%) $\bar{x}$					

Field or Laboratory/ Year Tested

Scoring system used

OTHER (SPECIFY) ____________________

Test conducted by ____________________ at ____________________

Variety	Resistance Class	Synthetic Generation Tested	Unadjusted % Resistance	Adjusted % Resistance	Number of Plants Tested
This Variety 1. 2. 3.	S				
L.S.D. (.05) C.V. (%) $\bar{x}$					

Field or Laboratory/ Year Tested ____________________

Scoring system used ____________________

OTHER (SPECIFY) ____________________

Test conducted by ____________________ at ____________________

Variety	Resistance Class	Synthetic Generation Tested	Unadjusted % Resistance	Adjusted % Resistance	Number of Plants Tested
This Variety 1. 2. 3.	S				
L.S.D. (.05) C.V. (%) $\bar{x}$					

Field or Laboratory/ Year Tested ____________________

Scoring system used ____________________

OTHER (SPECIFY) ____________________

Test conducted by ____________________ at ____________________

Variety	Resistance Class	Synthetic Generation Tested	Unadjusted % Resistance	Adjusted % Resistance	Number of Plants Tested
This Variety 1. 2. 3.	S				
L.S.D. (.05) C.V. (%) $\bar{x}$					

Field or Laboratory/ Year Tested ____________________

Scoring system used ____________________

WL 442
Attachment C-1

B. Persistence.

Enter dates of both initial and final stand estimates. **Data must come from the area of adaptation and from stands at least 24 months old.**
Comparison data is needed on two (2) check varieties.

Test Location	Syn Gen	Date Seeded Mo/Yr	Number of Years Harvested	Number of Harvests	Date of Readings (Mo/Yr) Initial/Final	% Stand This Variety Initial/Final	% Stand Check Varieties Archer Initial/Final	% Stand Check Varieties WL 457 Initial/Final	LSD	CV% .05
Lodi, CA	1	10/94	3	19	12/94/11/97	95/78	98/70	95/65	10.2	10.5
Willow Sprs, CA	1	9/95	2	9	11/95/11/97	98/80	95/80	95/75	12.5	9.5

Summarize Forage Yield Data below:

Test Location	Date Planted Mo/Yr	Syn Gen	Year Hvst	No. Cuts	Total Yield (DM T/A) 1. This Variety	2 WL 323	3 Archer	4 WL 457	LSD	CV% 05
Willow Sprs, CA	9/95	1	1996	4	5.15	5.05	5.10	4.91	0.20	3.51
			1997	5	8.88	8.85	9.02	8.91	0.41	3.99
Lodi, CA	10/94	1	1995	7	11.90	10.62	11.36	11.64	0.71	4.19
			1996	7	14.58	13.67	14.11	12.61	0.96	4.75
			1997	5	9.58	9.76	10.15	10.52	0.55	7.06
Lodi, CA	12/95	1	1996	6	13.73	11.13	12.24	12.90	0.77	4.25
			1997	5	12.72	10.53	11.35	9.98	0.65	6.75

	Number of Years Harvested	Total Number of Harvests	Mean Annual Yield This Variety	
Ck 2 Comparison	7	39	10.93	9.94
Ck 3 Comparison	7	39	10.93	10.48
Ck 4 Comparison	7	39	10.93	10.21

Exhibit D

Additional Description of Variety

WL 442 is a very high-yielding, intermediate dormancy (Group 7) alfalfa variety adapted for hay, green chop and dehydration uses in the southwestern United States. WL 442 displays superior disease, insect and nematode resistance and greater persistence when compared to other alfalfas with similar fall growth and adaptation.

WL 442 also displays superior forage quality (% crude protein, % TDN (total digestible nutrients) % RFV (relative feed value) when compared to competitive varieties (see below).

Forage Quality* - Lodi, California (1999)
Test Seeded October 1998

Entry	% Crude Protein	% TDN	Relative Feed Value
WL 442	**25.8**	**58.8**	**228**
DK 166	25.6	58.3	226
Tulare	25.0	58.1	219
Dura 843	23.4	58.0	219
Tahoe	24.4	57.7	217
WL 525 HQ	23.5	57.6	207
Mean	24.6	58.1	219
LSD (.05)	0.7	0.6	9
CV (%)	2.8	2.9	4.2

*Forage quality data (% CP, % TDN, RFV) averaged over three harvests (4 replicates/harvest) in June, August and September, 1999.

REPRODUCE LOCALLY. *Include form number and edition date on all reproductions.* FORM APPROVED - OMB NO. 0581-0055

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

EXHIBIT E
STATEMENT OF THE BASIS OF OWNERSHIP

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S)	2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER	3. VARIETY NAME
~~AgriBioTech, Inc.~~ Research Seeds, Inc.	W138	WL 442

4. ADDRESS *(Street and No., or R.F.D. No., City, State, and ZIP, and Country)*	5. TELEPHONE *(include area code)*	6. FAX *(include area code)*
~~120 Corporate Park Drive~~ 225 Florence Road ~~Henderson, NV 89014~~ St. Joseph MO 64504 ~~United States~~	816 - 238 - 7333 ~~(702) 566-2440~~	816 - 238 - 7849 ~~(702) 566-2450~~
	7. PVPO NUMBER 200000014	

8. Does the applicant own all rights to the variety? *Mark an "X" in appropriate block.* If no, please explain. [X] YES [ ] NO

9. Is the applicant (individual or company) a U.S. national or U.S. based company? [X] YES [ ] NO
If no, give name of country

10. Is the applicant the original owner? [X] YES [ ] NO ***If no, please answer one of the following:***

a. If original rights to variety were owned by individual(s), is (are) the original owner(s) a U.S. national(s)?
[ ] YES [ ] NO **If no, give name of country**

b. If original rights to variety were owned by a company(ies), is(are) the original owner(s) a U.S. based company?
[ ] YES [ ] NO **If no, give name of country**

11. Additional explanation on ownership *(if needed, use reverse for extra space)*:

PLEASE NOTE:

Plant variety protection can be afforded only to owners (not licensees) who meet one of the following criteria:

1. If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.
2. If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by nationals of a country which affords similar protection to nationals of the U.S. for the same genus and species.
3. If the applicant is an owner who is not the original owner, both the original owner and the applicant must meet one of the above criteria.

The original breeder/owner may be the individual or company who directed final breeding. See Section 41(a)(2) of the Plant Variety Protection Act for definition.